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108

basic imagery interpretation report

## Developments at Soviet Solid Propellant Production Facilities (S)

STRATEGIC WEAPONS INDUSTRIAL FACILITIES

BE: VARIOUS

USSR

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INSTALLATION OR ACTIVITY NAME					COUNTRY
Developments at Soviet Solid Propellant Production Facilities					UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	CATEGORY	BE NO.	COMIREX NO.	NIETB NO.
NA	See below	See below	See below	See below	See below

## MAP REFERENCE

ACIC. USATC, Series 200, Sheets 0156-11, 0161-2, 0161-21, 0234-22, and 0234-24, scale 1:200,000

## LATEST IMAGERY USED

## NEGATION DATE (If required)

NA

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Installation	Geographic Coordinates	Category	BE No	COMIREX No	NIETB (MRN) No
Biysk Solid Motor Production Plant I	52-29-05N 085-07-10E				
Biysk Solid Motor Production Plant II	52-28-48N 085-02-32E				
Biysk Solid Motor Test Area I	52-30-47N 085-04-55E				
Biysk Solid Motor Test Area II	52-31-19N 085-01-54E				
Kamensk-Shakhtinskiy Solid Motor Production Plant	48-17-54N 040-10-46E				
Kemerovo Solid Motor Production Plant	55-24-58N 085-58-32E				
Pavlograd Solid Motor Production Plant	48-34-01N 035-49-12E				
Pavlograd Solid Motor Assembly and Test Support Facility	48-27-10N 035-57-17E				
Pavlograd Solid Motor Test Facility	48-26-10N 035-58-20E				
Pavlograd Ordnance Research and Development Facility	48-29-26N 035-56-56E				
Perm Solid Motor Production Plant	57-59-18E 055-53-30E				

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## ABSTRACT

1. (S/D) This report describes recent developments at 11 Soviet facilities involved in the production and testing of solid-propellant rocket motors. It updates previous NPIC report [ ] and is based on all relevant [ ] the information cutoff date. A location map, 18 annotated photographs, and three tables are included.

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2. (TSR) At Biysk Solid Motor Production Plant II, a building believed to be associated with the production of SS-NX-20 motors was destroyed by an explosion in early spring 1980 and was rebuilt and returned to production status by late summer. A possible SS-NX-20 second-stage motor was tested at Biysk Solid Motor Test Area II in late summer.

3. (S/D) At Kamensk-Shakhtinskiy Solid Motor Production Plant, grading and excavations for a new possible motor production area were identified in late 1980, and the new solid motor production line was nearing completion.

4. (TSR) An extensive construction program continued during 1980 at the Pavlograd Solid Motor Production Complex. Most of this construction will probably be completed within two years. It will probably support series production of at least one new solid-propellant ICBM. Unlike other Soviet solid-propellant production facilities, Pavlograd will probably have the capacity to assemble complete missiles, as well as to produce motors.

## INTRODUCTION

5. (S/D) Each of the facilities discussed in this report is involved in the production, assembly, or testing of solid-propellant rocket motors and related components for strategic or tactical delivery systems. The locations of these facilities are shown in Figure 1.

6. (S/D) Previous NPIC reports have discussed the location, physical description, and security of these facilities, as well as their historical association with various missile systems or programs. This report will discuss developments that have occurred since the last NPIC report, dated August 1980.<sup>1</sup>

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## BASIC DESCRIPTION

### Biysk Solid Motor Production Complex

#### Solid Motor Production Plant I

7. (S/D) A new processing building was constructed in the nitroglycerin production area at the double base (DB) plant. The building is north of the final processing building of the south nitroglycerin line. The new processing building was started and externally completed during the year. A curved passageway/conduit was under construction on each side of the building. Eventually, the building will be surrounded with an earth mound, and the passageways will be earth covered. A personnel bunker and a shed were also completed during the early part of the year. At the explosives storage and handling area north of the DB plant, a large fabrication building was still under construction next to the water treatment plant.

8. (S/D) Construction continued on several buildings in the fabrication area east of the DB plant (Figure 2). One large fabrication building (item 1, Figure 2), in late stages of construction, will probably be externally complete by the spring of 1981. Two multistory administration buildings (items 2 and 3) and a two-story administration/security building (item 4), all on the west side of the fabrication area, were in late stages of construction. Excavations were being made for footings for a probable fifth large fabrication building on the south side of the area.

9. (S/D) No significant construction or activity was observed at the composite modified double base (CMDDB) plant.

#### Solid Motor Production Plant II

10. (TSR) An explosion and/or fire destroyed a possible casting building (Figure 3) at the

isolated propellant production line 3. The possible casting building was intact on [ ] but by [ ] only the building foundation and scattered debris remained. Reconstruction progressed rapidly, and the building was apparently returned to operational status by late summer. The new building was externally complete by [ ] and by [ ] construction debris had been removed from the site. The relatively short period of reconstruction suggests that the Soviets attach a high priority to the missile program associated with this production line. The isolated production line first became operational in late 1977. Since that time, no rocket motors or shipping containers have been observed to identify the size of motors produced. However, the line became operational at a time when it could have supported the production of SS-NX-20 second-stage motors. Rocket motors of this size were static tested at Solid Motor Test Area II during the year.

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#### Solid Motor Test Area I

11. (S/D) Static test activity at Test Area I was light during the year. A blast mark from a static test was seen at the large horizontal test cell on [ ]. It was not present on [ ]. A second static test may have occurred at this position on [ ]. The blast mark from the February test appeared to be slightly larger on [ ]. No expended rocket motor cases could be identified with these tests.

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12. (TSR) Movements of railcars into and around the H-shaped assembly and checkout building were observed during the year. Because of the light level of test activity at Test Area I, most of this rail traffic was probably related to motors tested at Test Area II. Throughout the year, 24-

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FIGURE 1. LOCATIONS OF SOVIET SOLID PROPELLANT PRODUCTION FACILITIES

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meter missile-associated railcars, boxcars, and flatcars were seen near the H-shaped building. They carried one, and usually two, canvas-covered crates measuring [redacted]. These crates probably carry motors destined for testing at Test Area II. One flatcar with two of these crates was seen between the two north bays of the H-shaped building from [redacted] and again from [redacted]. [redacted] a flatcar with one crate was beside a flatcar with two crates on the north side of the building. Missile-associated railcars were near the H-shaped building on [redacted]. A train consisting of a missile-associated railcar, a flatcar with one crate, and two flatcars with two crates each was on the south side of the H-shaped building from [redacted] (Figure 4). The missile-associated railcar was not present after [redacted] but the flatcars and crates remained in the area until [redacted]. Although these crates were not identified in the motor production

areas, their sizes are compatible with the possible SS-NX-20 second-stage motor, which was static tested at Solid Motor Test Area II during the year.

#### Solid Motor Test Area II

13. (TSR) Evidence of 12 static tests was observed at the isolated test cell between [redacted] 25X1  
[redacted] Table I, Figures 25X1  
5 through 7). Six of these tests were confirmed from imagery; two were assessed as probable; four were assessed as possible. Five of the tests were confirmed by blast marks in the snow and one by the presence of a motor (identified as a possible SS-NX-20 SLBM) in front of the thrust block. The two probable tests were determined by the presence of the transporter and its associated [redacted] crate at the test 25X1  
area and by the location of the environmental shelter over the thrust block. The possible tests were deter- 25X1  
mined only by the emplacement of the environmental 25X1  
shelter over the thrust block.

**Table 1.**  
**Activity at Biysk Solid Motor Test Area II**

*This table in its entirety is classified TOP SECRET RUFF*

Date	Description	Remarks*	
	Poss test activity	ES remained in front of TB	25X1
	No test activity	ES remained at side of test position	
	Test activity	[redacted] probable test fixture	25X1
		[redacted] diam) in front of	25X1
		TB (Figure 5)	
		[redacted] blast mark 300 m long	25X1
		x 71 m wide; transporter with	
		10-m crate on road east	
		of test position (Figure 6)	
	No apparent activity	ES moved to road in front of	
		test position	
	Poss test activity	[redacted] ES inside test position	25X1
		but not over TB	
		[redacted] ES over TB	25X1
		[redacted] ES at side of test position	25X1
	Poss test activity	[redacted] ES over TB; CR beside ES	25X1
		[redacted] ES at side	25X1
		of test position	
	Prob test activity	[redacted] ES over TB; transporter	25X1
		with 10-m crate on road	
		east of test position	
	No test activity	ES remained at side of	
		test position	
	Test activity	[redacted] ES over TB	25X1
		[redacted] poss SS-NX-20 second-stage	25X1
		motor on test fixture in front of TB;	
		transporter with 10-m crate inside	
		test position beside motor (Figure 7)	
		[redacted] ES over TB; transporter	25X1
		with 10-m crate on road east	
		of test position	
		[redacted] ES moved to west side of	25X1
		test position; transporter and	
		10-m crate remained on road	
		east of test position	
		[redacted] ES over TB; transporter absent	25X1

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Table 1. (continued)

Date	Description	Remarks*	
	No test activity	ES moved to west side of test position	25X1
	Poss test activity	ES over TB	
	No test activity	ES on road of test position	
	Prob test activity	[ ] ES over TB; transporter with 10-m crate east of test position	25X1
		[ ] ES over TB; transporter with crate absent	25X1
	No test activity	[ ] ES at west side of test position	25X1
	Test activity	[ ] ES over TB	25X1
		[ ] transporter with 10-m crate east of test position; unid object in front of TB	25X1
		[ ] CR moving poss cylindrical object at TB	25X1
		[ ] motor/test fixture in front of TB	25X1
		[ ] blast mark approx 300 m long; ES at side of test position	25X1
	Test activity	[ ] new small blast mark approx 200 m long; ES over TB	25X1
		[ ] ES at TB	25X1
		[ ] ES at side of test position	
	Test activity	[ ] ES at TB; small blast mark approx 150 m long in snow	25X1
	No test activity	ES at side of TB	
	Test activity	[ ] ES, CR at TB	25X1
		[ ] blast mark approx 300 m long; ES, CR at TB	
		[ ] CR at TB; ES at side of test position	25X1
	No test activity	[ ] ES at side of test position	25X1

## \*KEY:

ES Environmental shelter

TB Thrust block

CR Crane

14. (TSR) The level of activity observed from [ ] (12 tests) is roughly equivalent to the activity observed from [ ] (nine tests).<sup>1</sup> The actual test activity was probably no higher than during 1979, because the assessment of 12 tests is based on [ ]

Part of the motor was draped with canvas, so its diameter was difficult to determine. The frustum framework, inside which the front of the motor was mounted, was approximately [ ] in diameter.

### Kamensk-Shakhtinskiy Solid Motor Production Complex

#### Solid Motor Production Plant

15. (TSR) A possible SS-NX-20 second-stage motor was mounted in a test fixture against the thrust block (Figure 7) on [ ]. The shadow of the motor in the test fixture revealed a relatively short motor with a large diameter and a short, wide nozzle. The motor was [ ] the nozzle measured [ ] meters. The diameter of the nozzle was approxi-

16. (S/D) Grading and excavations for a new possible motor production area were identified in late 1980 outside the southwest corner of the composite propellant plant. The new solid motor production line outside the northwest corner of the original composite propellant plant was nearing completion by Septem-

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ber 1980. The probable casting/curing building (item 1, Figure 8) and the propellant mix building (item 2) were completed during 1979 and were possibly operational by early 1980. Two railspurs, under construction during 1980, lead to the finishing building (item 3), which was nearing completion. The fourth building in the line, which has been redesignated as a probable motor/component storage building (item 4), was probably complete in August 1980, although some paving blocks were still missing from the service apron around the building. In the original plant area, a 60- by 18-meter addition to the case preparation building (Figure 9) was started after May 1980 and was progressing rapidly by September 1980. Two new curing bays were added to the north side of the existing five-bay curing building (Figure 10) during this same time period.

17. (S/D) Construction continued at the east side of the test area. This construction was previously reported as a two-part structure (135 by 60 meters overall). The western part of the structure was a multistory building that was being backfilled to roof level on the south side. During 1980, the western wing was completed and a similar multistory wing was erected at the eastern part of the structure and was being backfilled at the end of the year.

#### Rocket Motor Test Area

18. (S/D) No evidence of static test activity at the large type-A test cell has been observed since 1969, when a large crack developed in the top of the cell. Since that time, strategic rocket motors produced at Kamensk-Shakhtinskiy have probably

been taken to Pavlograd for static testing. During July 1980, an effort may have been made to resume testing on a small scale at the type-A cell. A fire that might have resulted from the static test of a small motor occurred between [redacted] 25X1  
The vegetation on the back and north sides of the earthen blast deflector and the area between the deflector and the fence were burned. The face of the deflector on the blast apron showed no apparent evidence of scoring, as from a static test.

#### Kemerovo Solid Motor Production Complex

##### Solid Motor Production Plant

19. (S/D) No major construction was started at the plant and associated facilities during 1980. Construction continued on a TNT production plant (previously called the new explosives production plant).<sup>1</sup> Parts of the TNT plant have been under construction since early 1975 and could be completed during 1981 with moderate effort. When the area was last observed in November 1980, 18 of the 20 major buildings were externally complete. The remaining two buildings were in midstages of construction, but work has progressed slowly during the past six months. Earthen barricades were complete around two buildings and partially complete around four others. An overhead conveyor line/pipe gallery to the large processing building was under construction. Construction was continuing at a probable acid recovery building at the east corner of the plant.

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**Rocket Motor Test Area**

20. (S/D) No evidence of test activity involving the large horizontal test cell was observed during the year. A possible thrust-reversal test was observed on the apron between the test cell and the blast deflector on [ ] when a small probable burn mark with a double exhaust plume was observed (Figure 11). A small cylindrical test article was attached to a tie-down point in front of the large horizontal test cell. The probable burn marks apparently came from both ends of the test article. A similar but less symmetrical burn mark was also seen at the Perm isolated test position on [ ]. Both tests were similar to the much larger burn marks associated with a possible thrust-reversal test at Perm in October 1975.<sup>2</sup>

**Pavlograd Solid Motor Production Complex**

21. (TSR) A major expansion program is underway at the four areas of the Pavlograd complex. This expansion is probably directed toward the production of at least one new solid-propellant ICBM. Portions of some of the areas will be completed by mid-1981, but the entire program will probably not be completed and in full production until late 1982. This program includes a new solid motor production line next to the existing Solid Motor Production Plant, expansion of the Solid Motor Assembly and Test Support Facility, upgrading of the Solid Motor Test Facility, and

the construction of several new fabrication buildings at the Ordnance Research and Development Facility.

**Solid Motor Production Plant**

22. (S/D) Construction continued on the new rocket-motor production line just outside the west wall of the plant (Figure 12). In September 1980, nine major production buildings were under construction in the new area, compared with five major buildings in September 1979. A casting building had been constructed over the [ ] diameter casting pit. Earth mounding around the mix building was nearly complete. Adjacent to the mix building, a probable multiple-bay curing building was in final stages of construction. Earth-mounding around a probable casting/curing building and its associated control building was in early stages of construction. Pilings were being driven for three large buildings and a bay-charger track. Support footings for a fourth building were also observed. A possible rocket motor assembly building was in the midstage of construction.

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**Solid Motor Assembly and Test Support Facility**

23. (S/D) The major construction program that began at this facility in 1977 continued during 1980. Three new buildings were under construction: a shop/support building (item 9, Figure 13) begun in May, a second possible missile assembly/checkout building (item 10) begun in July, and an excavation for an unidentified building (item 6) begun in August. Construction continued at three

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**Table 2.**  
**Activity at Pavlograd Solid Motor Test Facility**

*This table in its entirety is classified TOP SECRET RUFF*

Date	Description	Remarks*	
	No test activity	—	25X1
	Poss test preparations	ES in front of TB	
	Unidentified activity	Empty transporter beside TB; cylinders/motors in burial pit shifted since [ ] excavation for new control building	25X1
	No test activity	ES and CR on apron at side of test position	
	Test activity	[ ] ES at TB	25X1
		[ ] end of motor visible inside ES	25X1
		[ ] burned grass from recent test; empty transporter beside ES at TB	25X1
	No test activity	ES and CR at side of apron; expended [ ] motor in burial pit, probably from [ ] activity	25X1 <sup>2</sup> 25X1
	Test preparations	ES in front of TB; 3 cylinders/motors (new since [ ]) in burial pit	25X1

**\*KEY:**

ES Environmental shelter  
TB Thrust block  
CR Crane

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other buildings: an addition to the engineering/administration building (items 7a and 7b) begun in 1978, a small probable missile assembly/checkout building (item 5) begun in 1978, and a large missile assembly/checkout building (item 8) begun in 1977.

24. (S/D) Four buildings associated with the 1977 expansion program possibly became operational during late 1980. These buildings, which are in the southeast corner of the facility, include two probable surge storage buildings (items 1 and 3) and two missile assembly/checkout buildings (items 2 and 4). The second surge storage building (item 1), the last building of the four to be completed, was finished between March and June 1980. Site cleanup and partial landscaping occurred in July. (Landscaping usually follows the completion of internal construction of a building and indicates that the building is ready to be integrated into the operation of the plant.) Landscaping was progressing slowly when the facility was last observed in September 1980. A 24-meter missile-associated railcar was in front of each of the missile assembly/checkout buildings in July and August, and a flatcar was partially inside one probable surge storage building in September.

25. (S/D) If construction continues at the 1979-1980 rate, three or four more buildings will be completed during 1981 and the remaining two buildings in 1982. The new two-wing administration annex (item 7) in the northeast end of the facility, the large probable missile assembly/checkout building (item 8), and the small possible shop/support building (item 9) in the northwest end of the facility are likely to be completed by late summer 1981. The small probable missile assembly/checkout building (item 5) in the northeast end of the facility will probably be completed by early 1982. The buildings for the two remaining excavations (items 6 and 10) will probably not be completed before late 1982.

#### Solid Motor Test Facility

26. (S/D) The construction of a new possible control building and the facing of the test position walls began during 1980 (Figure 14). The new possible control building is next to the service road west of the test position. A portion of the apron at the unidentified test area was excavated for the north end of the new building. The footings and excavation suggest that the overall building dimensions will be approximately 65 by 10 meters. Excavation for the building began in July 1980, and construction could take as long as two years. Facing the earthen walls and blast deflector of the test position with paving blocks began about May 1980 and was nearing completion by February 1981. February 1981 imagery suggests that further modifications to the test position, probably involving the thrust block, were starting. Some static testing was conducted at the test position during the past year in spite of the construction activity (Table 2).

#### Ordnance Research and Development Facility

27. (S/D) The extensive construction program, in progress since 1977, continued during 1980. A new fabrication building (item 1, Figure 15) and a new bay on a building under construction (item 2) were started between August 1979 and

June 1980. Footings and pilings indicate that the new building will be about 125 by 85 meters. The new bay will be approximately 145 by 25 meters. Construction continued on two large fabrication sections (items 3 and 4) being added to two buildings along the west side of the plant. The larger section, approximately 90 by 72 meters, was started in late 1975, and external construction should be completed by mid-1981. The smaller section, 96 by 42 meters, was started in late summer 1979, and external construction will probably not be completed until 1982. Construction also continued on an 84- by 12-meter addition (item 5) to the building associated with SS-17/18 launch-assist-device (LAD) loading operations. This addition, which was started in late 1979, has progressed rapidly. External construction could be completed by mid-1981. Construction of a fabrication building (item 7) and a shop/support building (item 6) in the southwest corner of the plant was externally complete in 1980. Construction of access roads, debris removal, and landscaping have not yet begun, and these tasks usually follow the internal completion of a building.

28. (S/D) Construction activity at this facility has almost certainly disrupted normal production activity. No SS-18 canister/capsule (CAN/CAP) trains were observed on four dates of coverage during 1980. Five CAN/CAP trains were observed on four dates of coverage during 1979. The SS-18 LAD operation has probably not been terminated, however. A CAN/CAP train carrying an SS-18 missile canister, an upper canister section, and a MOD-4 payload-associated canister was under a rail shed in an isolated corner of the Solid Motor Assembly and Test Support Facility (Figure 16) in August 1980. This was the first CAN/CAP train seen at that facility. The rail shed built in 1978 may provide temporary parking for the CAN/CAP trains during the major construction program at the Ordnance R&D Facility.

#### Perm Solid Motor Production Complex

##### Solid Motor Production Plant

29. (S/D) No major new construction was started at either the composite or the CMDDB plants during 1980. In early 1981, footings for a probable fabrication building (Figure 17) were emplaced next to the case preparation building in the CMDDB plant. The footings indicate that the new building will be about 150 by 80 meters.

30. (S/D) No new large strategic rocket motors or their containers were identified during 1980. A [ ] cylinder with two bands was near the case preparation building at the composite plant during 1980. An assortment of crates measuring approximately 6 by 2 meters was near the cylinder. At least three sizes of previously reported banded cylinders were frequently seen on railcars in the two plants, but most often in the composite plant. These cylinders, which measured [ ] are probably in-plant containers for environmental protection and concealment of rocket motors. The cylinders were also seen at the static test facility. Rail traffic at the two plants is relatively heavy, suggesting that the production rate is high. From

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three to eight 24-meter missile-associated railcars were normally seen at the composite plant; one was normally present at the CMDDB plant.

#### New Fabrication Area

31. (S/D) Extensive construction activity continued in the fabrication area during 1980, but no new buildings were started. Three small shop/support buildings in the southeast corner of the area were externally completed during the year. The emplacement of footings for two large fabrication buildings, started in mid-1979, continued on the west side of the plant. Footings for another large building are also being emplaced just south of the large existing fabrication building. These three new buildings will probably not be completed for more than three years. The facility will be engaged in light fabrication operations requiring large amounts of floorspace, but specific operations or products have not yet been identified.

#### New Solid Motor Production Line

32. (S/D) At the end of the reporting period, the new solid motor production line southwest of the CMDDB plant was in the final stages of construction. This line will probably enter production during 1981.

33. (S/D) By February 1981, the twelfth and final building at the southwest end of the line was externally complete (Figure 18). Construction materials around the building indicated that interior construction activity was continuing and landscaping at

this end of the plant had not started. Roads and landscaping for most of the other buildings in the line were completed, suggesting that the production line was nearing an operational capability. Building occupancy was indicated by snow melt on all steamlines. A large section of the security fence was incomplete, however, and active construction areas were not isolated from the finished parts of the new line. Also, earth mounding was not complete on the probable mix section of the casting/curing building. This production line is rail served, and road traffic appeared to be light.

#### Final Assembly Area

34. (S/D) The assembly area was essentially unchanged since the previous year. The last significant construction in this area took place in 1977, when the long service bay was extended and a fifth attached assembly/shop building was completed. Missile railcars and standard boxcars are usually present in the area. No missile-related crates have been identified, however. The presence of the collocated horizontal test building implies that small motors for a tactical-size missile are series assembled and tested at the facility.

35. (S/D) A fourth and fifth test bay on the east side of the horizontal test building were externally complete by mid-1980. Late in 1980, an irregularly shaped excavation was dug at the end of the blast apron. Most of the excavation was in front of the two new test bays, but part extended in front of two adjacent older test bays. Construction materials were near the excavations.

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**Table 3.**  
**Activity at Perm Isolated Test Position**

*This table in its entirety is classified TOP SECRET RUFF*

Date	Description	Remarks*	
	Test activity	Small burn mark approx 50 m long	25X1
	No activity observed	—	
	Poss test activity	<input type="checkbox"/> ES in front of TB	25X1
		<input type="checkbox"/> CR near TB; ES at entrance to test position	25X1
	Poss test activity	<input type="checkbox"/> ES at TB	25X1
		<input type="checkbox"/> ES moved to usual storage area near entrance to test area	25X1
	Unidentified activity	<input type="checkbox"/> ES near entrance to test area	25X1
		<input type="checkbox"/> CR near TB; ES near entrance	25X1
	Poss thrust-reversal test	<input type="checkbox"/> CR at TB; ES near entrance to site	25X1
		<input type="checkbox"/> burn mark indicating poss thrust-reversal test	25X1
	No test activity		
	Test activity	<input type="checkbox"/> small motor test; small burn mark on apron	25X1
	Test activity	<input type="checkbox"/> smoke/steam cloud over test position	25X1
		<input type="checkbox"/> small burn mark on apron	25X1
	Poss test activity	<input type="checkbox"/> snow melt, possibly from small motor test	

**\*KEY:**

ES Environmental shelter

TB Thrust block

CR Crane

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**Rocket Motor Test Facility and Isolated Test Position**

36. (S/D) There was no photographic evidence of static testing of large strategic-size rocket motors during the year. Blast marks observed at the isolated test position on [ ]

[ ] were from smaller motors. These tests only partially melted the snow on the blast deflector, 70 meters from the thrust block. No test activity was observed at the type-A test position.

37. (S/D) A blast mark from a possible thrust-reversal test was observed at the tie-down position on the apron near the blast deflector of the isolated test position on [ ] (Figure 19). Similarly shaped (but larger) blast marks were seen at this same location in 1972 and 1975.<sup>2</sup> Each of the burn marks from the earlier tests was at least 30 meters long and

extended to the blast deflector and walls of the U-shaped revetment. The plumes of the 1980 test were slightly more than 8 meters long. A similar blast mark was also observed at the Kemerovo Rocket Motor Test Facility on [ ]

38. (S/D) Relatively heavy rail traffic in the test facility suggested that test activity was high. Most of this test activity is probably of the nondestructive type--radiographic and sonargraphic, for example--rather than static. Rocket motor crates and cylindrical shipping containers were stored at several locations within the test facility. Most of the cylindrical objects were stacked and were relatively small, ranging in sizes of [ ]

[ ] A few large probable shipping containers in the range of [ ] were seen--usually only as single sightings.

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**REFERENCES****IMAGERY**

[ ]

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**DOCUMENTS**

1. NPIC. [ ] *Activity and Developments at Soviet Solid Propellant Production Facilities* (S), Aug 80 (TOP SECRET [ ])
2. NPIC. [ ] *Perm Solid Motor Production Complex*, Jun 76 (TOP SECRET [ ])

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\* Extracted material is classified SECRET/WNINTEL.

**REQUIREMENT**

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Project 541045J

(S) Comments and queries regarding this report are welcome. They may be directed to [ ] Soviet Strategic Forces Division, Imagery Exploitation Group, NPIC, [ ]

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